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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,106	10/09/2003	Mun Ho Jung	3449-0276P	8106

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EXAMINER

LOUIS JACQUES, JACQUES H

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 07/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/681,106

Applicant(s)

JUNG ET AL.

Examiner

Jacques H. Louis-Jacques

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-10 and 12-14 is/are rejected.
7) ☒ Claim(s) 11 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01222004.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on January 22, 2004 was filed before the mailing date of the first office action on the merits. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner. However, only the English abstract of the Korean document (216535) has been submitted. The full document of the Korean patent has not been submitted. Therefore, the examiner only considers the English abstract of the document.

Claim Objections

3. Claims 2, 10 are objected to because of the following informalities:

In claim 2, step (b-1), Applicant is suggested to add --;-- after "satellite".

In claim 10, line 5, Applicant is suggested to add a period --- after "data". Appropriate correction is required.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation is step (b-3) of claim 2 appears to be incomplete. The step ends with a recitation “determining that the location of the moving object is in the visible region when.” It is not clear from the recitation when it is determined that the location of the moving object is in the visible region? For purpose of examination, the examiner has treated the claim as if the condition “when” was not present.

Claim 5 recites “due north reference angle between the moving straight line and link”. It is not clear what link the claim refers to?

Also, claim 5, line 6, the limitation “the moving straight line” lacks clear antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-5, 7-10, 12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Mathis [5,948,043].

Mathis discloses a navigation method and system using GPS data for tracking an object (i.e., estimating a location of the object). According to Mathis, there is provided: receiving GPS location data from a moving object (e.g., an automobile). See abstract, figures 1, 2 [200]; determining GP'S shadow area by using the received a GPS location data. See figures 2 [202], 3, 4, 8; calculating a moving straight distance of the moving object, with reference to a last GPS location data in visible regions when the moving object is in a GPS shadow area. See figure 8, column 12; calculating a virtual location data by using the calculated moving straight distance of the moving object. See figure 2 [204], 5-7 and 8, and columns 7, 12; and calculating an estimated location on a digital numeric map positioned nearest from the virtual location data, and performing a map-matching to provide a navigation service. See abstract, figures 2 [206], 8.

Mathis also discloses calculating an identifying value on reliability of GPS location data by using GPS location data from a plurality of GPS satellites (abstract, figures 1, 2, columns 4-6); comparing the calculated identifying value with a set value (abstract, columns 4-6); and if the identifying value is greater than or equal to the set value, determining that the location of the moving object is in the shadow area, and if the

identifying value is less than the set value, determining that the location of the moving object is in the visible region (columns 5-6 and 7 [21-34]).

According to Mathis, the identifying value of the reliability of the GPS location data is a horizontal dilution of precision (HDOP). See abstract, columns 5-6.

The location of the moving object, according to Mathis, is estimated using the GPS location data or dead reckoning (DR) technique when the location of the moving object is determined to be in the visible region by using GPS location data. See columns 1, 3.

Furthermore, according to Mathis, the virtual location data is calculated using a reference point of any one of the last GPS location data in the GPS visible region and the estimated location data of the moving object in the shadow area, moving straight distance, due north reference angle between the moving straight line and link. See columns 6, 7 and 11-12. The due north reference angle of the link, according to Mathis, is a link due north reference angle positioned on extended of traveling direction with reference to the previous map-matching location data of GPS location data. See columns 11-12.

In addition, Mathis discloses, if estimated location of the moving object is map-matching onto the digital numeric map, obtaining next virtual location data of the moving object by using moving straight distance of the moving object and due north reference angle of the corresponding link with reference to the map-matching location, and calculating next estimated location by map-matching the next virtual location data onto shortest distance of the digital numeric map. See columns 10-12.

As described above, Mathis discloses receiving GPS location data, determining GPS shadow area by using the received GPS location data, obtaining a map-matching value of

a last GPS location data in visible regions when the moving object is in a GPS shadow area, and calculating moving straight distance of the moving object with reference to the map-matching value. In addition, Mathis discloses detecting interpolated points (i.e., by iteration) and link of location estimated using the calculated moving straight distance of the moving object, ascertaining whether the moving object is on the detected link, and estimating a moving location by using distance of the link, coordinates of the interpolated point, speed (velocity) of the moving object and length of the link if the moving object is on the detected link. See figures 5-8, columns 8-12.

The link in traveling direction and the interpolated points connected to the link, according to Mathis, are detected on a digital numeric map by using moving straight distance calculated using speed (velocity) and time of the moving object and previous last map-matching location data. See column 10 [62-67] to column 12 and figure 8.

According to Mathis, a next location of the moving object in the shadow area is estimated using moving straight distance (or residue moving straight distance) of the moving object, coordinates of interpolated points connecting the link on the digital numeric map, length of the link, and due north reference angle of the link, and the location data (longitude, latitude) of the moving object in the shadow area can be calculated using speed and time of the moving object, estimated direction of the link, coordinates (longitude, latitude) of post interpolated point. See figures 5-8, columns 8-12.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathis [5,948,043].

Mathis discloses the coordinates (longitude, latitude or X, Y) of the virtual location data (columns 6, 11). In addition, Mathis discloses coordinates (e.g., longitude and latitude) of previous map-matching location, speed of the moving object, angle of previous map-matching location, and time of the location of the moving object. See columns 6-7 and 10-11. Mathis does not particularly disclose the equations for determining the coordinates (longitude and latitude) of the virtual location data as:

longitude = longitude of previous map-matching location + speed of the moving object + \cos (attitude angle of previous map-matching location) * time (sec), and

latitude = latitude of previous map-matching location + speed of the moving object * \sin (attitude angle of previous map-matching location) * time (sec).

However, although Mathis does not particularly disclose the equations in the same fashion as recited, it would have been obvious to one of ordinary skill in the art at the time of the invention to be motivated to use the disclosed components of Mathis to obtain the coordinates of the virtual location data because it would provide greater positioning accuracy, thereby enabling a highly accurate position (longitude and latitude) calculation.

Allowable Subject Matter

10. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art do not particularly teach, in combination, calculating residue distance of link by using distance to next interpolated points from the last match-matching reference; comparing the residue distance of the link with moving distance of the moving object if the residue distance of the link is calculated, determining that the moving object is on the corresponding link if the residue distance of the link is greater than or equal to the moving distance of the moving object, and determining that the moving object is on another link if the moving distance of the moving object is greater than the residue distance of the link; and if the moving object is on another link, subtracting the residue distance or the link from the moving straight distance of the moving object, comparing the subtracted residue moving straight distance with distance of another link, and determining whether the moving object is on another link.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

4,796,191	Honey et al	Jan. 1989
5,311,195	Mathis et al	May 1994
5,337,243	Shibata et al	Aug. 1994
5,416,712	Geier et al	May 1995

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5,483,456	Kuwarahara et al	Jan. 1996
5,552,990	Ihara et al	Sep. 1996
6,324,474	Beisner et al	Nov. 2001
6,657,584	Cavallaro et al	Dec. 2003
6,728,637	Ford et al	Apr. 2004
US 20040210383	Sato	Oct. 2004
JP 2002213979	Ito	July 2002

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques H. Louis-Jacques whose telephone number is 571-272-6962. The examiner can normally be reached on M-Th 5:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jacques H Louis-Jacques
Primary Examiner
Art Unit 3661

/jlj

Jacques H. Louis-Jacques
JACQUES H. LOUIS-JACQUES
PRIMARY EXAMINER